

**AMENDMENTS**

**In the Claims**

1. (Currently Amended) A network device comprising:  
~~a network interface, wherein~~  
    ~~said network interface comprises~~  
a processor **[[and]]** ;  
a first memory, **[[and]]** wherein  
    said processor and said first memory are coupled to one another; **[[and]]**  
a tunnel classification stage, wherein  
    said processor is coupled to control said tunnel classification stage ~~is~~  
    ~~coupled to said network interface,~~  
said tunnel classification stage comprises  
    a packet processing section comprising at least one processor,  
    a security group identifier identification unit, coupled to said  
        packet processing section, and  
    a tunnel classification unit, coupled to said packet processing  
        section and said security group identifier identification unit,  
said security group identifier is configured to identify a security group of a  
    sender of said packet, and  
said packet processing section is configured to  
    classify a packet based on a security group identifier (SGI) of said  
        packet,  
    forward said packet through a tunnel via which said packet is to be  
        forwarded, and  
    determine said tunnel using said SGI.

2.-3. (Cancelled)

4. (Previously Presented) The network device of claim 1, wherein said packet processing section is further configured to forward said packet through said tunnel based on information in a header of said packet.

5. (Cancelled)

6. (Previously Presented) The network device of claim 1, wherein a single router comprises said tunnel classification stage.

7. (Previously Presented) The network device of claim 6, wherein said tunnel classification unit comprises:  
a lookup unit.

8. (Previously Presented) The network device of claim 7, wherein said lookup unit comprises:  
an access control list (ACL); and  
a content-addressable memory, wherein  
said content-addressable memory is configured to access said ACL by  
virtue of being configured to  
generate an index, and  
provide said index to said ACL.

9. (Previously Presented) The network device of claim 8, wherein said network device further comprises a memory,  
said ACL is stored in said memory,  
said content-addressable memory and said memory are coupled to one another,  
said ACL comprises a plurality of ACL entries (ACEs), and  
each of said ACEs comprises a tunnel identifier field and a security group identifier field.

10. (Previously Presented) A method comprising:  
assigning a security group identifier (SGI) to a packet, wherein  
said SGI is assigned based on a security group of a sender of said packet;  
classifying said packet based on said SGI;  
determining a routing of said packet, wherein said determining is based on said  
SGI; and  
forwarding said packet via a tunnel identified by said routing, if forwarding a  
packet having said SGI via said tunnel is permitted.
11. (Original) The method of claim 10, further comprising:  
determining whether said packet can be sent via a tunnel based on a result of said  
classifying said packet.
- 12.-13. (Cancelled)
14. (Original) The method of claim 11, wherein said determining comprises:  
generating an index, wherein said index comprises said SGI; and  
using said index to access an access control list (ACL), wherein said ACL  
includes information as to whether said packet can be sent via a tunnel.
15. (Original) The method of claim 14, wherein said information comprises:  
an SGI field; and  
a tunnel identifier field.
16. (Original) The method of claim 10, further comprising:  
forwarding said packet from an ingress router to an egress router via a tunnel.
17. (Original) The method of claim 16, further comprising:  
receiving said packet at said egress router; and  
determining whether said packet can be forwarded by said egress router based on  
said SGI.

18. (Original) The method of claim 17, wherein said determining whether said packet can be forwarded further comprises:  
determining whether said packet can be forwarded by said egress router based on said SGI, a destination of said packet and an identifier of said tunnel.
19. (Original) The method of claim 17, wherein said determining whether said packet can be forwarded further comprises:  
generating an index into an access control list (ACL), wherein  
said ACL comprises information regarding whether said packet can be forwarded by said egress router, and  
said index includes said identifier of said tunnel; and  
accessing said ACL using said index.
20. (Previously Presented) A computer system comprising:  
a processor;  
computer readable storage medium coupled to said processor; and  
computer code, encoded in said computer readable storage medium, configured to cause said processor to:  
assign a security group identifier (SGI) to a packet, wherein  
said SGI is assigned based on a security group of a sender of said packet; generate a classification of said packet by virtue of being configured to classify said packet based on said SGI;  
determine whether said packet can be sent via a tunnel based on said classification; and  
forward said packet via said tunnel, if forwarding a packet having said SGI via said tunnel is permitted.

21. (Cancelled)

22. (Previously Presented) The computer system of claim 20, wherein said computer code is further configured to cause said processor to:  
determine a routing of said packet, wherein said classification is also based on said routing.

23. (Cancelled)

24. (Previously Presented) The computer system of claim 20, wherein said computer code configured to cause said processor to determine is further configured to cause said processor to:  
generate an index, wherein said index comprises said SGI; and  
use said index to access an access control list (ACL), wherein said ACL includes information as to whether said packet can be sent via a tunnel.

25. (Original) The computer system of claim 24, wherein said information comprises:  
an SGI field; and  
a tunnel identifier field.

26. (Original) The computer system of claim 20, wherein said computer code is further configured to cause said processor to:  
forward said packet from an ingress router to an egress router via a tunnel.

27. (Original) The computer system of claim 26, wherein said computer code is further configured to cause said processor to:  
receive said packet at said egress router; and  
determine whether said packet can be forwarded by said egress router based on said SGI.

28. (Original) The computer system of claim 27, wherein said computer code configured to cause said processor to determine whether said packet can be forwarded by said egress router is further configured to cause said processor to:

determine whether said packet can be forwarded by said egress router based on said SGI, a destination of said packet and an identifier of said tunnel.

29. (Original) The computer system of claim 27, wherein said computer code configured to cause said processor to determine whether said packet can be forwarded by said egress router is further configured to cause said processor to:

generate an index into an access control list (ACL), wherein  
said ACL comprises information regarding whether said packet can be  
forwarded by said egress router, and  
said index includes said identifier of said tunnel; and  
access said ACL using said index.

30. (Currently Amended) A computer program product, wherein said computer program product comprises a computer-readable storage medium, and further comprising:

a plurality of instructions, comprising

a first set of instructions, executable on a computer system, configured to  
assign a security group identifier (SGI) to a packet, wherein  
said first set of instructions are further configured to assign said  
SGI based on a security group of a sender of said  
packet[[:]] ,

a second set of instructions, executable on said computer system,  
configured to classify said packet based on said SGI[[:]] ,

a third set of instructions, executable on said computer system, configured  
to determine a routing of said packet, wherein said determining is  
based on said SGI[[:]] , and

a fourth set of instructions, executable on said computer system,  
configured to forward said packet via said tunnel, if forwarding a  
packet having said SGI via said tunnel is permitted; and  
**said** computer-readable storage **[[media]] medium**, wherein said ~~computer~~  
~~program-product is~~ **instructions are** encoded in said computer-readable  
storage **[[media]] medium**.

31. (Previously Presented) The computer program product of claim 30,  
wherein said second set of instructions is further configured to generate a classification of  
said packet, and further comprising:

a fifth set of instructions, executable on said computer system, configured to  
determine whether said packet can be sent via a tunnel based on said  
classification.

32.-33. (Cancelled)

34. (Previously Presented) The computer program product of claim 31,  
wherein said fifth set of instructions comprises:

a first subset of instructions, executable on said computer system, configured to  
generate an index, wherein said index comprises said SGI; and  
a second subset of instructions, executable on said computer system, configured  
to use said index to access an access control list (ACL), wherein said ACL  
includes information as to whether said packet can be sent via a tunnel.

35. (Original) The computer program product of claim 34, wherein said  
information comprises:

an SGI field; and  
a tunnel identifier field.

36. (Previously Presented) The computer program product of claim 30, further comprising:  
a fifth set of instructions, executable on said computer system, configured to forward said packet from an ingress router to an egress router via a tunnel.

37. (Previously Presented) The computer program product of claim 36, further comprising:  
a sixth set of instructions, executable on said computer system, configured to receive said packet at said egress router; and  
a seventh set of instructions, executable on said computer system, configured to determine whether said packet can be forwarded by said egress router based on said SGI.

38. (Previously Presented) The computer program product of claim 37, wherein said seventh set of instructions comprises:  
a first subset of instructions, executable on said computer system, configured to determine whether said packet can be forwarded by said egress router based on said SGI, a destination of said packet and an identifier of said tunnel.

39. (Previously Presented) The computer program product of claim 37, wherein said seventh set of instructions comprises:  
a first subset of instructions, executable on said computer system, configured to generate an index into an access control list (ACL), wherein said ACL comprises information regarding whether said packet can be forwarded by said egress router, and said index includes said identifier of said tunnel; and  
a second subset of instructions, executable on said computer system, configured to access said ACL using said index.

40. (Currently Amended) An apparatus comprising:  
**a processor;**



**a memory, coupled to the processor;**

means for assigning a security group identifier (SGI) to a packet, wherein  
said means for assigning said SGI is configured to assign said SGI based  
on a security group of a sender of said packet;

means for classifying said packet based on said SGI, wherein  
said means for classifying is coupled to said means for assigning, and  
said means for classifying comprises **[[a]] the memory;**

means for determining a routing of said packet, wherein  
said means for determining comprises **[[a]] the processor,** and  
said means for determining is configured to use said SGI in determining  
said routing; and

means for forwarding said packet via a tunnel identified by said routing, if  
forwarding a packet having said SGI via said tunnel is permitted, **wherein**  
**said means for forwarding is coupled to said means for determining.**

41. (Original) The apparatus of claim 40, further comprising:

means for determining whether said packet can be sent via a tunnel on based a  
result generated by said means for classifying said packet.

42. (Cancelled)

43. (Previously Presented) The apparatus of claim 41, further comprising:

means for forwarding said packet via said tunnel, wherein said means for  
forwarding is configured to forward said packet via said tunnel if  
forwarding a packet having said SGI via said tunnel is permitted.

44. (Original) The apparatus of claim 41, wherein said determining  
comprises:

means for generating an index, wherein said index comprises said SGI; and  
means for using said index to access an access control list (ACL), wherein said  
ACL includes information as to whether said packet can be sent via a  
tunnel.

45. (Original) The apparatus of claim 44, wherein said information comprises:  
an SGI field; and  
a tunnel identifier field.
46. (Previously Presented) The apparatus of claim 40, wherein said means for forwarding said packet is configured to forward said packet from an ingress router to an egress router via said tunnel.
47. (Original) The apparatus of claim 46, further comprising:  
means for receiving said packet at said egress router; and  
means for determining whether said packet can be forwarded by said egress router based on said SGI.
48. (Original) The apparatus of claim 47, wherein said means for determining whether said packet can be forwarded further comprises:  
means for determining whether said packet can be forwarded by said egress router based on said SGI, a destination of said packet and an identifier of said tunnel.
49. (Original) The apparatus of claim 47, wherein said means for determining whether said packet can be forwarded further comprises:  
means for generating an index into an access control list (ACL), wherein said ACL comprises information regarding whether said packet can be forwarded by said egress router, and  
said index includes said identifier of said tunnel; and  
means for accessing said ACL using said index.